

Cardinal Insulated Glass, Spring Green Facility, Green Tier – 2017 & 2018

CARDINAL IG 



Who we are and what we do:

Cardinal Insulated Glass, Spring Green (SGIG) manufactures high performance insulated glass units for the residential wood window market.



SGIG Environmental Mission Statement: Achieving and maintaining environmental quality is necessary for continued, sustainable operation and is an essential part of the SGIG plant strategy. **SGIG will meet all environmental standards applicable to our operation and plan environmental management activities to improve operational efficiencies and minimize environmental impacts.**

SGIG's Sustainability Program:

SGIG's sustainability program is a 5 pillar program which reports to the Environmental Management Board, a committee composed of the plant leaders. The purpose of the program is to address environmental improvement opportunities in each of the following areas:

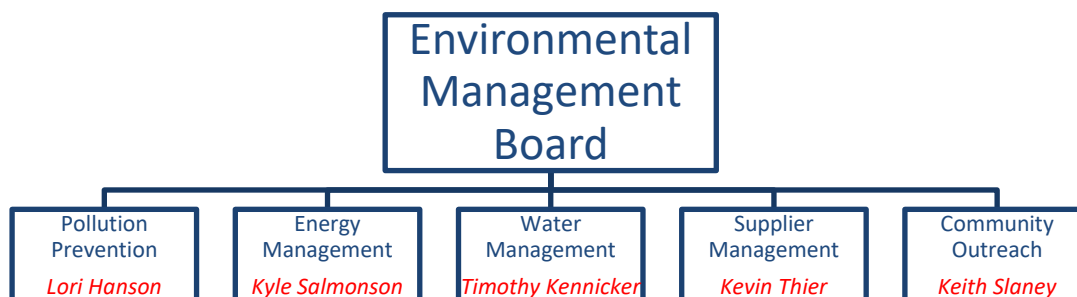
Pollution Prevention – Focused on the three pillars of reduce, reuse and recycle. We are ultimately committed to reducing our environmental impact, but in the absence of reduction we will attempt to reuse what we can and finally recycle all which we are able to.

Energy Management – We are committed to purchasing and consuming energy in the most efficient, cost-effective, and environmentally responsible manner possible. Towards this end, SGIG will continuously improve energy efficiency by implementing an effective energy management program that supports operations and customer satisfaction while simultaneously providing a safe and comfortable work environment for its employees.

Water Management – Committed to ensuring on-site water consumption is reduced and/or optimized to verify that efficient and environmentally friendly processes are implemented and practiced.

Supplier Management – The purpose of supplier management is to evaluate/improve the supply chain and control the incoming material looking to have materials that are in compliance with material standards and suppliers are conforming to the SGIG's EMS standards, limiting environmental impacts.

Community Outreach (Green Team) – The Green team is responsible for external communication relative to SGIG's environmental management program as well as conducting at least 3 environmental outreach projects per year.



Executive Summary

In 2017 & 2018, Spring Green IG's environmental program continued to gain momentum in its progression towards achieving its goals while, simultaneously, identifying future potential improvement projects. With process and system implementation complete, Spring Green IG continued to reduce many forms of waste including energy inefficiencies, and water consumption.

The Pollution Prevention team is taking a close look into the recent rise in waste to landfill. With the intent to establish more achievable goals. New opportunities from a different recycling facility is allowing SGIG to effectively recycle our Polyfilm. SGIG continues researching outlets for our laminated glass. The Energy Management pillar is highly focused on systems and new lighting equipment to reduce energy. In 2017 & 2018, 16 existing HVAC systems were replaced with new high efficiency HVAC systems and we continue to replace existing lighting with LED technology. Our Supply Chain Management pillar has continued working with the EPA's SmartWay Program to develop truck routing and create effective reporting to track transportation. Continue to evaluate salt usage on Cardinal property. Water Management's implementation of our Reverse Osmosis Water Leak Detection System on all production lines is complete. This has identified opportunities that could improve our water usage inefficiencies. Green Team continues to support our local community by engaging in activities with schools, food pantries & local Law Enforcement. Below you will find a summary of each of our pillars and a description of any and all improvement efforts for each respective pillar for the 2017 & 2018 calendar years.

Pollution Prevention

Introduction

Since the initiative was started in 2009, Cardinal IG Spring Green has been able to reduce their waste to the land fill by **EIGHTY PERCENT in 2013**.

Our Goal and Results

2017 & 2018 we took a big step in the wrong direction with .21lbs in 2017 & .30lbs landfill per unit produced in 2018. This is an increase of nearly 50%. Over our goal of .15lbs per unit produced landfill.

Due to the fluctuating plastics market in 2018, we lost our outlet for plastic masking causing Cardinal IG to send several tons of plastic masking and plastic A-frame material to the landfill. If this material would have been kept from the landfill, lbs. per unit produced would have been .22lbs. with a 3 year average of .21lbs. (2016, 2017 & 2018).

At Cardinal IG Spring Green, we believe we can continue to reduce the ratio of pounds of waste to landfill per unit produced. This will be no small task but Cardinal IG Spring Green is committed to doing what is right for the environment.

Pollution Prevention Projects completed in 2017 - 2018

We will continue to have materials evaluated for recycling. Which supplier will provide the best practical solution for waste disposal? Our new outlet for preserve is allowing us to divert several tons from the landfill. An attempt to chip plastic a-frame plastics to make it more appealing to recyclers. This turned out to be very costly and hazardous to associates.

Future Goals

In 2019, our goal at Cardinal IG Spring Green is to reduce our pounds of waste per unit to landfill to .15lbs. This would be approximately a 28% improvement over a 3 year average of .21 pounds. SGIG will continue to research outlets for our laminated glass and plastic A-frame material. By continuing in the right direction and discovering small opportunities in the future, we will achieve our ultimate goal of **ZERO LANDFILL**.

Energy Management

Our Goal

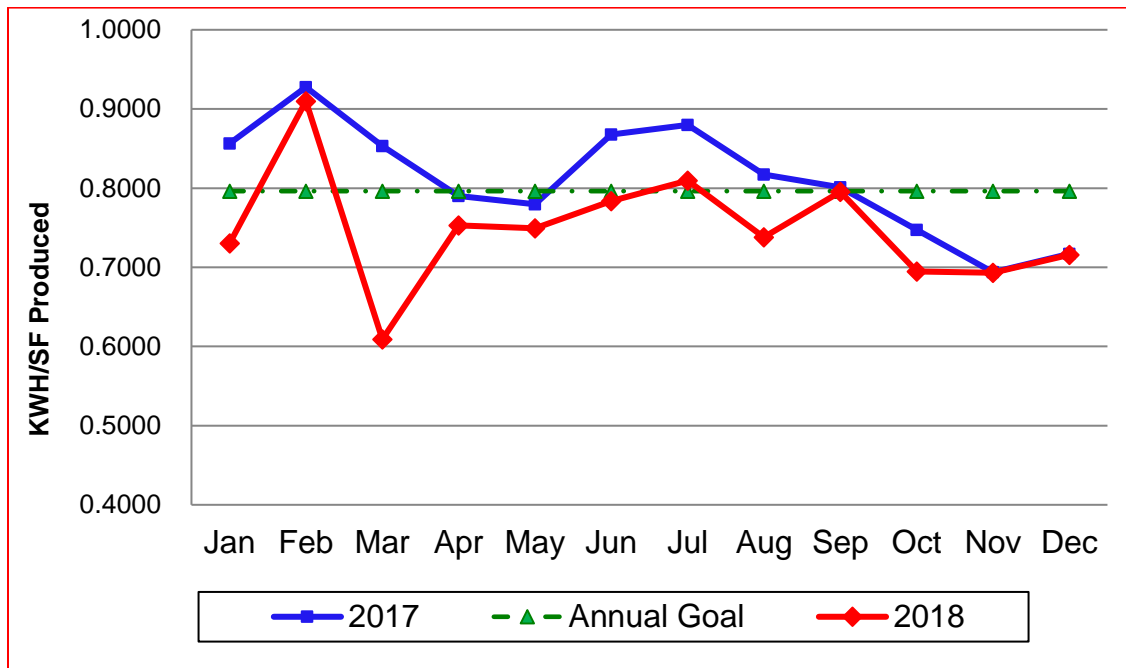
In 2017 & 2018, SGIG was able to find ways to reduce energy consumption throughout different areas of the facility. We continue our commitment to continuously improve energy efficiency in a way that supports operation and customer satisfaction while simultaneously providing a safe and comfortable work environment for our employees.

Results

A summary of energy management improvements and projects implemented in 2017 & 2018:

- Lighting in our glass tempering furnace room and above one of our insulating glass production lines have been replaced with new LED light fixtures.
- Two tempering furnace blower VFDs replaced with new units.
- 16 HVAC units were replaced with new, higher efficiency units.
- Updates to building HVAC automation system. This has improved the overall building climate control efficiency. It has also helped to reduce glass breakage in our tempering furnace and maintenance down time on our HVAC units.

The average number of kilowatt hours per square foot of product produced for 2018 came in at 0.74. In 2017 our annual energy consumption goal was lowered from 0.84 to 0.79 kilowatt hours per square foot produced. The 2018 average of 0.74 is below our 2017 average of 0.80 and lower than our annual goal of 0.79 kilowatt hours per square foot produced.



Looking to 2019

In 2019, we at SGIG look to reduce our energy usage by continuing to find new ways to improve equipment and process efficiency. We also plan to lower our annual electrical consumption goal to .74 kwh/sqft.

Supply Chain Management

2017 and 2018 Goals

- Investigate new outlets for Chemical Waste.
- Continue working with SmartWay to develop truck routing and create effective reporting to track transportation.
- Recycling and re-use of packaging material.
- Understand salt usage on Cardinal property.

Results

- Became SmartWay Partner.
- Defined waste streams for our wastes.
- Was able to re-use many packaging materials to avoid material going to recycle center and land fill.
- Developed a method to track salt usage on the SGIG property.

2019 Goal

- Ensure evacuation plans are in place for chemical spills for any materials.
- Plant layout that includes spill containment kits location.
- Evaluate purchases for opportunities to use more environmentally friendly products.

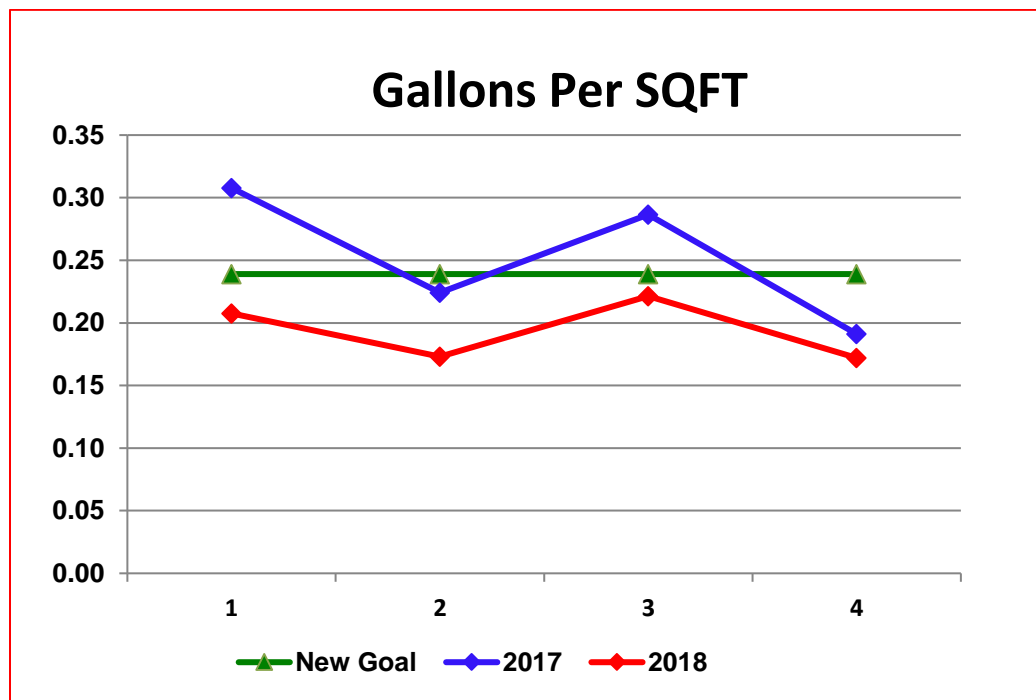
Water Management

Our Goal

In 2017 and 2018, SGIG reduced the goal from 0.35 to 0.239 gallons/sqft. The new goal was based on the average consumption during 2016. SGIG continues to successfully accomplish ways to reduce its water consumption in multiple areas of its process. SGIG's goal is to continue our success in reducing water consumption without becoming complacent due to our success. We will continue to review our goals and set the bar higher and higher each year.

Results

In 2017 & 2018, we were able to complete the implementation of our Reverse Osmosis Water Leak Detection system on all Production Lines. This system has helped to detect water losses outside of expected production consumption. In 2017, SGIG exceeded their goal in the 2nd and 4th quarters. In 2018, SGIG exceeded their goal for the entire year.



Looking to 2019

Looking to 2019, we at SGIG plan to review our goals and set the bar higher as we have accomplished .239 gallons/sqft for the entire year of 2018. We look to reduce our water goal to .194 gallons/sqft in 2019 with our increased efficiency gains and the addition of a new GTA Washer on our tempering line.

Green Team

Community Outreach Program

The goal of our team is to improve education on the importance of recycling and reusing materials. SGIG will reach out to the community and provide proper outputs for E-waste and other materials. Helping our community by getting local support organizations the resources they need to be effective. Our team will continue to educate the 4th grade classes of our area about how important taking care of our environment is and by planting new trees.

2017 & 2018 Activities

We ran events such as E-waste collection, 4th grade tree giveaway, and worked with the local food pantries. In 2017 & 2018 we continued our E-waste collection that collected food donations for the local Food Pantry. This seems to be a very positive way to get community involvement.

- 2017 – 42120 lbs. of E-waste collected, 1560 lbs. of food & \$375 which was donated to a local food pantry.
- 2018 – 37710 lbs. of E-waste collected, 1100 lbs. of food & \$503 donated to a local food pantry

We have collected and recycling old batteries and light bulbs from the associates in our plant to help recycle them the proper way. We have played a positive role in the community by attending and supporting local activates like Homecoming & Light parades. In 2018 our team joined forces with the local COPS For Kids Campaign. We initiated a giving tree at Christmas time, Associated who were able to purchase needed items from tags. This was a huge success and we had overwhelming support from our associates. Sixteen families which included 63 children were supported by SGIG associates.



Future Goal:

The Green Team would like to continue with our annual events by improving or adding more activities, including the giving tree. SGIG will team up with the local school district to recycle markers and highlighters through the Crayola ColorCycle program. Reaching more needy people in the community whether it be local food pantries, schools, and other local organizations & helping our factory's sustainability.